CLAIMS

1. A method comprising:

(a) providing a lens having a curved surface; and

(b) applying a polarizing liquid to at least a portion of the curved surface by shear flow with a flexible apparatus.

2. The method of claim 1, wherein the polarizing liquid is disposed on the curved surface prior to shear flow.

3. The method of claim 1, wherein the polarizing liquid is disposed on the flexible apparatus prior to shear flow.

4. The method of claim 3, wherein the polarizing liquid is disposed on the periphery of the flexible apparatus.

5. The method of claim 1, wherein the lens is placed in a lens holder.

6. The method of claim 5, wherein the lens holder is curved.

7. The method of claim 6, wherein the lens holder is curved to match the radius of the curved surface of the lens.

8. The method of claim 5, wherein the polarizing liquid is disposed on the lens holder between the lens and the flexible apparatus prior to shear flow.

9. The method of claim 8, wherein the polarizing liquid is disposed in a substantially straight line.

10. The method of claim 1, wherein the shear flow is linear shear flow.

11. The method of claim 10, wherein the linear shear flow is high linear shear flow.

12. The method of claim 1, wherein the flexible apparatus is swept across the lens.

13. The method of claim 1, wherein the flexible apparatus is a flexible rod.

14. The method of claim 1, wherein the flexible portion comprises a circular, rectangular, or spherical portion.

15. The method of claim 1, wherein a material is wrapped around the flexible apparatus.

16. The method of claim 15, wherein the material is a wire.

17. The method of claim 1, wherein the flexible apparatus comprises a groove.

18. The method of claim 1, wherein the flexible apparatus comprises etching.

19. The method of claim 1, wherein the flexible apparatus comprises a substantially smooth surface.

20. The method of claim 1, wherein the flexible apparatus is rotatable.

21. The method of claim 1, wherein the flexible apparatus is not rotatable.

22. The method of claim 1, wherein the flexible apparatus is configured to be attached to a holder apparatus.

23. The method of claim 1, where the curved surface has not been treated to create an orientation prior to the coating.

24. The method of claim 1, where the portion is coated with a material prior to the rotating.

25. The method of claim 24, where the material is an adhesion primer layer.

26. The method of claim 25, where the adhesion primer layer comprises a coupling agent.

27. The method of claim 1, where the curved surface is a convex surface, and the lens has a concave surface substantially opposite the convex surface.

28. The method of claim 1, where a polarized coating is formed after the shear flow.

29. The method of claim 1, further comprising adjusting a dye in the polarizing liquid to customize a color of the polarized coating.

30. The method of claim 1, further comprising curing the polarizing liquid to form a polarized coating on the portion, the polarized coating having a contrast ratio of at least 8.

31. The method of claim 30, where the polarized coating has a contrast ratio of at least 30.

32. The method of claim 30, where the polarized coating has a contrast ratio of at least 50.

33. The method of claim 30, where the surface has not been treated to create an orientation prior to the shear flow.

34. An ophthalmic lens coated with a polarizing liquid by performing at least the method of claim 1.

35. An apparatus comprising a flexible portion, wherein the flexible portion is configured to dispose a coating onto a convex portion of a lens by shear flow.

36. The apparatus of claim 35, wherein the flexible portion is a flexible rod.

37. The apparatus of claim 35, wherein the flexible portion comprises a circular, rectangular, or spherical portion.

38. The apparatus of claim 35, wherein a material is wrapped around the flexible portion.

39. The apparatus of claim 38, wherein the material is a wire.

40. The apparatus of claim 35, wherein the flexible portion comprises a groove.

41. The apparatus of claim 35, wherein the flexible portion comprises etching.

42. The apparatus of claim 35, wherein the flexible portion comprises a substantially smooth surface.

43. The apparatus of claim 35, wherein the flexible portion is rotatable.

44. The apparatus of claim 35, wherein the flexible portion is not rotatable.

45. The apparatus of claim 35, wherein the apparatus is configured to be attached to a holding apparatus.

46. The apparatus of claim 45, wherein the holding apparatus is adjustable in length or width.

47. The apparatus of claim 45, wherein the holding apparatus comprises an aperture.

48. The apparatus of claim 47, wherein the aperture is configured to accept the apparatus comprising a flexible portion.

49. The apparatus of claim 45, wherein the holding apparatus comprises a branch.

50. The apparatus of claim 49, wherein the branch is configured to accept the apparatus comprising a flexible portion.

51. The apparatus of claim 49, wherein the branch is removable.

52. An apparatus comprising:

(a) an ophthalmic lens having a convex surface; and

(b) a polarized coating disposed on the convex surface, the polarized coating including a material that forms a polarized coating following shear flow of the material over the convex surface.

53. The apparatus of claim 52, where the polarized coating includes lyotropic liquid crystal material.

54. The apparatus of claim 52, further comprising one or more layers disposed on the convex surface.

55. A method for forming a polarizing coating on a curved surface of a substrate which comprises :

(a) providing a substrate having a curved surface ;

(b) placing the substrate in a holder such that the substrate curved surface is freely accessible, said holder having an external surface surrounding the substrate curved surface ;

(c) providing a flexible rod ;

(d) depositing a polarizing liquid on an area of the holder external surface or of the substrate curved surface ;

(e) applying the flexible rod on the holder external surface between its periphery and the deposited polarizing liquid so that the flexible rod matches the curvature of the holder external surface ;

(f) moving the flexible rod past the deposited polarizing liquid and the substrate, whereby a film of the polarizing liquid is formed by shear flow on the substrate curved surface ;

(g) drying the film of polarized liquid to form a polarizing coating ; and

(h) recovering the substrate having a curved surface with a polarized coating thereon.

56. The method of claim 55, wherein the flexible rod is biased to apply a pressure force substantially normal to the holder external surface and substrate curved surfaces during entire moving step (f).

57. The method of claim 55, wherein the holder external surface is a curved surface.

58. The method of claim 57, wherein the holder external curved surface has the same curvature as the substrate curved surface.

59. The method of claim 57, wherein the flexible rod is preformed to an accurate shape prior to application step (e) of the flexible rod on the holder external surface.

60. The method of claim 55, wherein the flexible rod has an external surface provided with a plurality of circumferentially spaced grooves.

61. The method of claim 60, wherein the flexible rod comprises a flexible core having a wire wrapped around.

62. The method of claim 55, wherein the substrate curved surface is a convex surface.

63. The method of claim 55, wherein the substrate is a lens.